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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Zhengkai Gao

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06/23/2009

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EXAMINER

FINDLEY, CHRISTOPHER G

ART UNIT

PAPER NUMBER

2621

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/519,420	<b>Applicant(s)</b> GAO ET AL.	
	<b>Examiner</b> CHRISTOPHER FINDLEY	<b>Art Unit</b> 2621	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4 and 6 is/are rejected.
- 7) ☒ Claim(s) 2, 3 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/29/2007</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**2. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6229563 B1, hereinafter referred to as “Miller”) in view of Kennedy et al. (US 4695881 A, hereinafter referred to as “Kennedy”) in view of Gin (US 6912007 B2).**

Re **claim 1**, Miller discloses a plug-in furnace and kiln-oriented video camera, comprising: a body of a video camera (Miller: column 3, lines 54-65, a camera is attached to a lance), a video recorder (23) (Miller: Fig. 1, video recorder 26), wherein the body of a video camera comprises a video camera (19) (Miller: column 3, lines 59-65), a pick-up gun (16) (Miller: column 3, lines 40-44, the lance is equivalent to a “pick-up gun”), a pipe-typed cooler (9) (Miller: column 2, lines 53-54 and column 3, lines 44-53, cooling fluid is circulated through a cooling fluid jacket), a sealing device (15) (Miller: Fig. 2, casing 30 and sleeve 38; column 5, lines 22-24, the camera is encased in a waterproof material; column 5, lines 46-52), a sight hole (21) (Miller: Fig. 2, lens 33 acts as a sight hole for the camera to pick-up images), a blow-down ring (22) (Miller: Fig. 2, the space between water jacket 14 and sleeve 38 provides a rig-shaped gap through which air may be blown as indicated by air under pressure 43), wherein the video camera

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(19) is installed at a front end of pick-up gun (16) (Miller: column 3, lines 40-44, the lance is equivalent to a "pick-up gun"), a ring gap 28 of video camera (19) is formed between blow-down ring (22) and video camera (19) (Miller: Fig. 2, the space between water jacket 14 and sleeve 38 provides a ring-shaped gap through which air may be blown as indicated by air under pressure 43); a double sealing structure of valve (13) and sealing sheath (15) (Miller: Fig. 2, mounting collar 41; column 5, lines 49-56, the cross shape of the collar 41 defines air ducts for the passage of compressed air); a double gas protection for blow-down wind through the ring gap via an inner wind from sight hole (21) and an outside blow-down from sight hole (21) (Miller: Fig. 2, the space between water jacket 14 and sleeve 38 provides a ring-shaped gap through which air may be blown as indicated by air under pressure 43); a video recorder (23) and monitor (24) are placed outside the furnace shell, connected through a cable line to the video camera (19) and the temperature measurement element (20) (Miller: Fig. 1, video recorder 26 and TV monitor 25 are located in a control unit 20; column 4, lines 5-22, the control unit is located exterior of the furnace wall).

Miller does not specifically disclose a digital thermometer (25); and a temperature measurement element (20); wherein the camera is inserted into the furnace through the pipe-typed cooler (9) installed at the flange short pipe (4) of a furnace shell (Kennedy: Figs. 1 and 5; column 5, lines 27-31); wherein the temperature measurement element is located near the top of video camera (19) in pick-up (16); and that the digital thermometer (25) is placed outside the furnace shell. However, Kennedy discloses an apparatus for imaging infrared emitting surfaces, wherein a mounting for a television

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camera and extension lens assembly especially adapted for televising the interior of an apertured hazardous chamber are disclosed (Kennedy: column 3, lines 44-47). In the apparatus of Kennedy, an insulated infrared pick-up device is mounted on the boiler (Kennedy: column 3, lines 19-27), wherein one of ordinary skill in the art at the time of the invention would have found it obvious that sensing infrared light directly correlates to sensing temperature. Also, Kennedy discloses that the processing components are kept separate from the sensing portion of the apparatus (Kennedy: column 3, lines 32-37), thus indicating that the elements which actually perform the processing indicative of temperatures sensed by the pick-up are located external to the chamber. Furthermore, Kennedy discloses that a flange is welded onto the wall of the boiler or kiln and is made integral with a cylindrical tube for mounting the pick-up (Kennedy: column 5, lines 27-31). Since both Miller and Kennedy relate to monitoring the interior of a furnace or kiln, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the infrared temperature sensing capabilities of Kennedy with the system of Miller in order to improve the mounting of such a device and provide improved images (Kennedy: column 1, lines 6-11 and column 2, lines 38-52).

Neither Miller nor Kennedy specifically discloses that video camera (19) comprises a lens of wide angle, with an angle of view in the range of 90-120°. However, Gin discloses a securable corner surveillance unit, wherein a surveillance camera is mounted in a camera compartment within an enclosed space (Gin: Abstract section), and wherein a surveillance camera is mounted in a camera compartment within the housing, the camera being fitted with a wide angle lens that gives a field of

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vision of at least 90 degrees in the horizontal and in the vertical planes (Gin: column 3, lines 27-30). Since Miller, Kennedy, and Gin all relate to monitoring an enclosed space, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the wide angled lens of Gin with the combined system of Miller and Kennedy in order to provide a camera placement that is sufficiently removed from the contents of the enclosed space, thereby avoiding damage and allowing for maximum view of the entire enclosed space (Gin: column 1, lines 6-10 and column 4, lines 19-26).

Re **claim 6**, Miller discloses that the micro video camera uses CCD with a wide range of light sensing (Miller: column 1, lines 16-31, indicates that use of a CCD in conjunction with a lance is well known in the art.). The cited portion of Miller is located in the background section, but does not teach away from using the CCD camera with the lance. The problem presented in the above cited passage, and subsequently addressed in the detailed description of the invention, merely pertains to the placement of the camera on the lance. Therefore, the cited passage is applicable to claim 6.

**3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6229563 B1, hereinafter referred to as “Miller”) in view of Kennedy et al. (US 4695881 A, hereinafter referred to as “Kennedy”) in view of Lemelson et al. (US 20010014436 A1, hereinafter referred to as “Lemelson”).**

Re **claim 4**, Miller discloses an image processing system, comprising: a body of a video camera, which receives an image of a burden and an adjacent equipment in a

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furnace (Miller: column 3, lines 54-65, a camera is attached to a lance); a computer (Miller: Fig. 1, control unit 20); and a color monitor (Miller: Fig. 1, TV monitor 25).

Miller does not specifically disclose that the video camera receives infrared light emitted from a furnace charge; the light is transformed into an infrared image when the furnace operates without visible light and that the computer is for making an image process for the image, and obtaining the quantitative data of and temperature distribution of the burden; and that the color monitor in accordance with a relative relation between the strength of infrared light and the temperature of a measured object, transforms gray values of various points in the image into temperature value. However, Kennedy discloses an apparatus for imaging infrared emitting surfaces, wherein a mounting for a television camera and extension lens assembly especially adapted for televising the interior of an apertured hazardous chamber are disclosed (Kennedy: column 3, lines 44-47). In the apparatus of Kennedy, an insulated infrared pick-up device is mounted on the boiler (Kennedy: column 3, lines 19-27), wherein one of ordinary skill in the art at the time of the invention would have found it obvious that sensing infrared light directly correlates to sensing temperature. Also, Kennedy discloses that the processing components are kept separate from the sensing portion of the apparatus (Kennedy: column 3, lines 32-37), thus indicating that the elements which actually perform the processing indicative of temperatures sensed by the pick-up are located external to the chamber. Since both Miller and Kennedy relate to monitoring the interior of a furnace or kiln, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the infrared temperature sensing capabilities of

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Kennedy with the system of Miller in order to improve the mounting of such a device and provide improved images (Kennedy: column 1, lines 6-11 and column 2, lines 38-52).

Neither Miller nor Kennedy specifically discloses that the computer obtains the quantitative data of gas distribution and displayed in the distribution status of temperature or gas for the burden in the forms of a STN color diagram, a numerical diagram and a curve diagram. However, Lemelson discloses a combustion chamber with automatically optimized combustion control, wherein graphs illustrating the variation of temperature, flame grade, and typical pollutant concentration as a function of the air to fuel (A/F) ratio are taken into account when performing automatic adjustment of chamber parameters (Lemelson: Figs. 11 and 12A-12D; paragraphs [0085]-[0112]). Since Miller, Kennedy, and Lemelson all relate to monitoring the internal state of a high temperature chamber, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the graphical air-to-fuel characteristics of Lemelson with the combined system of Miller and Kennedy in order to optimize the ratio (Lemelson: paragraphs [0018]-[0019]).

***Allowable Subject Matter***

**4. Claims 2, 3, and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**



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The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach or suggest that the pipe-typed cooler (9) has a diameter ranging up to 60-200 mm and a length ranging up to 200-3000 mm; wherein the sight-hole (21) has an aperture up to  $\Phi 3$ - $\Phi 15$  mm; and wherein the width of the gap of the blow-down gap (28) is 0.2-3.0 mm, as recited in claims 2 and 5. Claim 3 depends from claim 2, and, therefore, is objected to also.

### ***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER FINDLEY whose telephone number is (571)270-1199. The examiner can normally be reached on Monday-Friday (8:30 AM-5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/  
Supervisory Patent Examiner, Art Unit 2621

/Christopher Findley/